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(54) **Title:** METHOD AND SYSTEM FOR AUTOMATIC VISION INSPECTION AND CLASSIFICATION OF MICROARRAY SLIDES
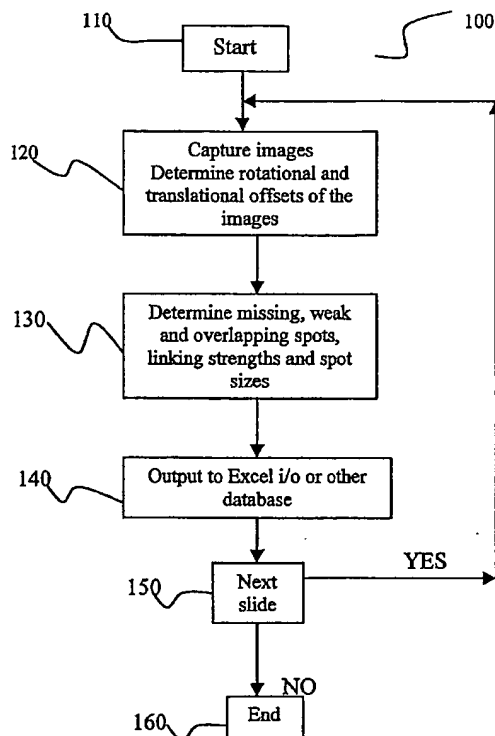
(57) **Abstract:** The present invention provides a unique low cost vision inspection and classification system and methods for automatic inspection and classification of a microarray slide without manual intervention. The method first performs morphological dilation operation several times such that internal microarray spots are merged as a big connected component; then, the orientation of the merged spots, with respect to the X-axis and Y-axis is computed by computing the angle of the external boundaries of the connected component using Sobel XY operators for both edges and orientation determination, or using the moment-based algorithm for direct orientation determination; and the translational offset is determined by finding the X and Y centroids of the connected component. Moreover, the present invention provides threshold methods for classifying spots into normal spots, weak spots, missing spots, or overlapping spots.

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